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### Remarks

Claims 1-14 are pending. By this Amendment, claims 1-2, 4-5, 7-8, 10-11 and 13-14 have been amended.

In the Office Action, claims 1-14 are objected to because of informalities. By this Amendment, claims 1, 2 and 10 have been amended. Claims 4-14 are objected to under 37 CFR 1.7(c) as being in improper form. By this Amendment, claims 4-5, 7-8, 10-11 and 13-14 have been amended to be in proper form. Accordingly, Applicant respectfully requests withdrawal of the objections.

In the Office Action, claims 1-9 and 11-14 are rejected under 35 USC 103(a) over Darwish et al. (USPN 5,688,725), hereinafter "Darwish," in view of Kocon et al. (USPN 6,351,009), hereinafter "Kocon"; and claim 10 is rejected under 35 USC 103(a) over Darwish in view of Kocon, and further in view of Mo (USPN 6,316,806). Applicant respectfully traverses these rejections for the reasons stated below.

"To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations." (MPEP 706.02(j)). In this case, Applicant submits that the Office fails to establish a *prima facie* case of obviousness for the reasons stated below.

With regard to claim 1, for example, Applicant respectfully submits that the suggested combination of the cited references fails to teach or suggest, *inter alia*,

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"ruggedness regions are ... more heavily doped than the channel-accommodating regions ... and extend into the drain region[,]" as recited in claim 1. The Office admits that Darwish does not disclose or suggest this feature. (*See* Office Action at page 3.) Contrary to the Office's assertion, however, Applicant submits that Kocon does not overcome, *inter alia*, this deficiency of Darwish, because in Kocon, neither the P+ body regions 304 nor the N+ source regions 306 are more heavily doped than the P region 305. (*See* FIGS. 3A-3B.) In addition, neither the P+ body regions 304 nor the N+ source regions 306 of Kocon extend into the drain region 303. (*See* Id.)

With further regard to claim 1, the claimed invention includes, *inter alia*, "the ruggedness regions being more heavily doped than the source regions." Kocon does not disclose or suggest this feature. In view of the foregoing, the suggested combination of the cited prior references does not teach or suggest each and every claimed feature and the Office fails to establish a *prima facie* case of obviousness. Accordingly, Applicant respectfully requests withdrawal of the rejection.

Applicant submits that the dependent claims are allowable for the same reasons stated above, as well as for their own additional features. For example, with regard to claim 11, the claimed invention includes, *inter alia*, "the doping concentration of the ruggedness regions is approximately 10 times than the doping concentration of the source regions." Admitting that Darwish and Kocon do not disclose this feature, the Office asserts that "it would have been obvious to one of ordinary skill in the art ... to have the doping concentration of the ruggedness regions being approximately 10 times greater than the doping concentration of the source regions," because "it was well within the skills of an artisan in the art to optimize the performance of a semiconductor device by

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adjusting the doping concentration of the ruggedness regions and the source regions[.]” (Office Action at page 4). Applicant respectfully traverses this assertion because mere possibility of modification is not enough to warrant a section 103 rejection. The Office must show a suggestion or motivation to modify prior art. In this case, the Office fails to establish such a suggestion or motivation. The above-identified feature of the claimed invention is created based on, *inter alia*, a novel finding that “a significantly improved suppression of parasitic bipolar transistor action is achieved if the ruggedness regions are more heavily doped than the source regions[.]” (Specification of the claimed invention at page 5). Neither Darwish nor Kocon suggests such a motivation to improve suppression of parasitic bipolar transistor action. As such, neither Darwish nor Kocon suggests the ruggedness regions are more heavily doped than the source regions. Please note, it is not enough to show a motivation “to optimize the performance of a semiconductor device” (Office Action at page 4), rather, the Office needs to establish an artisan in the art is motivated to “optimize” the performance of “[a] vertical power transistor trench-gate semiconductor device” in the exact manner as disclosed in the claimed invention by the above-identified feature of claim 11. Applicant submits that the Office fails to establish this and the Office obtains a suggestion or motivation to modify only from the hindsight teachings of the claimed invention. In view of the foregoing, the Office fails to establish a *prima facie* case of obviousness. Accordingly, Applicant respectfully requests withdrawal of the rejection.


Conclusion

Applicant respectfully submits that the application is in condition for allowance.

If the Examiner believes that anything further is necessary to place the application in condition for allowance, the Examiner is requested to contact Applicant's undersigned representative at the telephone number listed below.

Respectfully submitted,

Dated: 11/2/05

  
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